

CLAIMS

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1. A stent delivery system comprising:  
a catheter including a stent mounting region;  
a stent disposed about the stent mounting region of the catheter, the stent having a  
5 distal end and a proximal end, the stent further having an unexpanded state and an  
expanded state, and  
at least one stent retaining sleeve, the at least one stent retaining sleeve having an  
inside surface and an outside surface and a first end and a second end,  
the first end overlying an end of the stent when the stent is in the  
10 unexpanded state, the second end engaged to at least a portion of the catheter adjacent to  
the stent mounting region;  
the outside surface being composed of a first material, at least a portion of  
the first end of the inside surface being composed of a second material;  
the first material having a first predetermined hardness, the second  
15 material having a second predetermined hardness, the second predetermined hardness  
having a higher durometer value than the first predetermined hardness.
2. The stent delivery catheter of claim 1 wherein the second material is relatively  
smoother than the first material.
- 20 3. The stent delivery catheter of claim 1 where in the first predetermined hardness is  
less than approximately 55D, and the second predetermined hardness is least 55D.
4. The stent delivery catheter of claim 1 where in the first predetermined hardness  
25 is approximately 35D, and the second predetermined hardness is approximately 55D.
5. The stent delivery catheter of claim 1 wherein the inside surface is comprised of  
the second material.
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- 30 6. The stent delivery catheter of claim 1 wherein the first material and the second  
material are co-extruded.

7. The stent delivery catheter of claim 1 wherein the second material is a coating, the coating being applied to at least the first end of the inside surface of the at least one  
5 stent retaining sleeve.

8. The stent delivery system of claim 7 wherein the coating is selected from at least one member of the group consisting of: polyolefins, polystyrene, polyvinyl chloride, acrylonitrile-butadiene-styrene polymers, polyacrylonitrile, polyacrylate, vinyl acetate  
10 polymer, cellulose plastics, polyurethanes, polyethylene terephthalate, polyacetal, polyethers, polycarbonates, polyamides, polyphenylene sulfide, polyarylethersulfones, polyaryletherketones, polytetrafluoroethylene, and any combinations thereof.

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9. The stent delivery system of claim 1 wherein the first material is constructed from  
15 at least one member of the group consisting of: styrenic block copolymers, polyurethanes, silicone rubber, natural rubber, copolyesters, polyamides, EPDM rubber/polyolefin, nitril rubber/PVC, fluoroelastomers, butyl rubber, epichlorohydrin, polyester elastomers, polyamide elastomers and any combinations thereof.

20 10. The stent delivery system of claim 1 wherein the second material is constructed from at least one member of the group consisting of: polyolefins, polystyrene, polyvinyl chloride, acrylonitrile-butadiene-styrene polymers, polyacrylonitrile, polyacrylate, vinyl acetate polymer, cellulose plastics, polyurethanes, polyethylene terephthalate, polyacetal, polyethers, polycarbonates, polyamides, polyphenylene sulfide, polyarylethersulfones,  
25 polyaryletherketones, polytetrafluoroethylene, and any combinations thereof.

11. A stent retaining sleeve for retaining stent ends on a balloon catheter comprising:  
a first material and a second material, wherein the first material has a first predetermined hardness and the second material has a second predetermined hardness,  
30 the second predetermined hardness being greater than the first predetermined hardness;  
the stent retaining sleeve having an inside surface and an outside surface,

and a first end and a second end, the inside surface of the first end constructed and arranged to overlay an end of a stent, the second end constructed and arranged to be in contact with at least a portion of a catheter;

at least a portion of the inside surface of the first end being composed of  
5 the second material.

12. A stent delivery system comprising:

a catheter including a stent mounting region;

a stent disposed about the stent mounting region of the catheter, the stent having a  
10 distal end and a proximal end, the stent further having an unexpanded state and an expanded state, and

at least one stent retaining sleeve, the at least one stent retaining sleeve having a first end and a second end, the first end overlying an end of the stent when the stent is in the unexpanded state, the second end engaged to at least a portion of the catheter adjacent  
15 to the stent mounting region;

the at least one sleeve having an inside surface and an outside surface, at least a portion of the inside surface characterized as being harder than the outside surface.